#2.9BF

Attorney Docket No.: 6004.200-US

PATENT

Issue Batch Number: **054**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Belghuith et al.

Confirmation No: Belghuith et al.

Serial No.: 09/383,318

Group Art Unit: 1652

Filed: August 26, 1999

Examiner: Slobodyansky

Confirmation No: 6411

For: Polypeptides Having Glucose Isomerase Activity And Nucleic Acids Encoding Same

**SUBMISSION OF FORMAL DRAWINGS**

Commissioner for Patents
Washington, DC 20231

Sir:

Applicants submit herewith 5 sheets of formal drawings, containing Figures 1, 2, 3, 4A, 4B, 5 for the above-captioned application. The formal drawings are being filed in response to the request contained in the Attachment to the Notice of Allowance and Issue Fee Due, mailed November 6, 2001, and should be substituted for the corresponding sheets of informal drawings of the originally filed application.

Respectfully submitted,

Date: February 1, 2002

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11-01

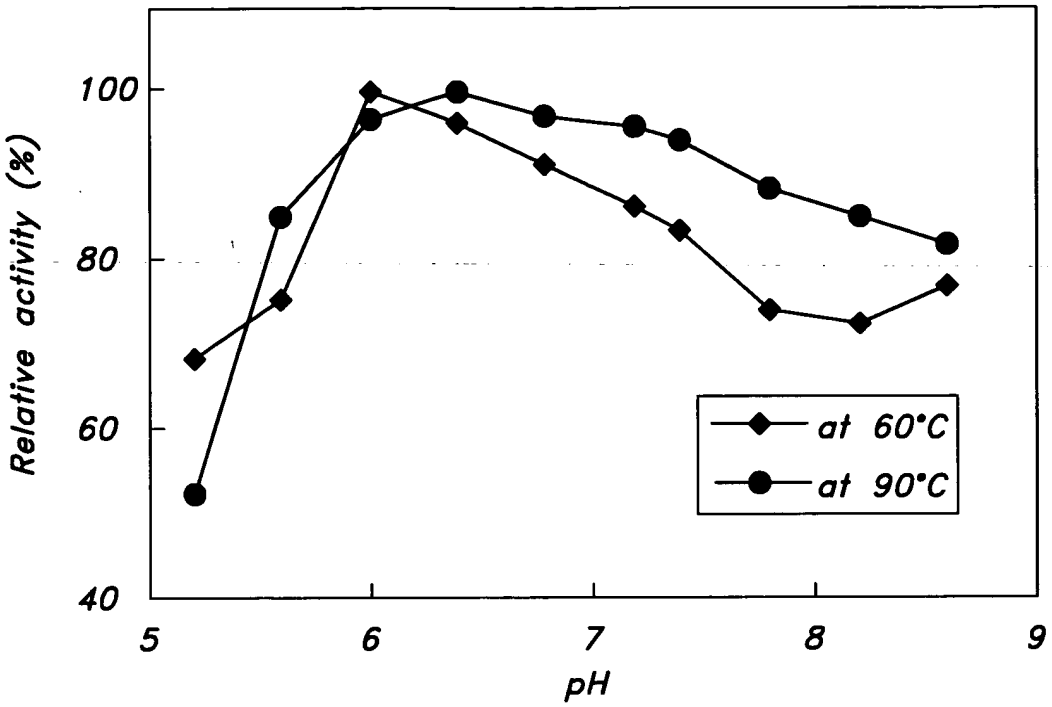

Relative activity (%)
100
80
60
40
5
6
7
8
9
pH
at 60°C
at 90°C

FIG 1

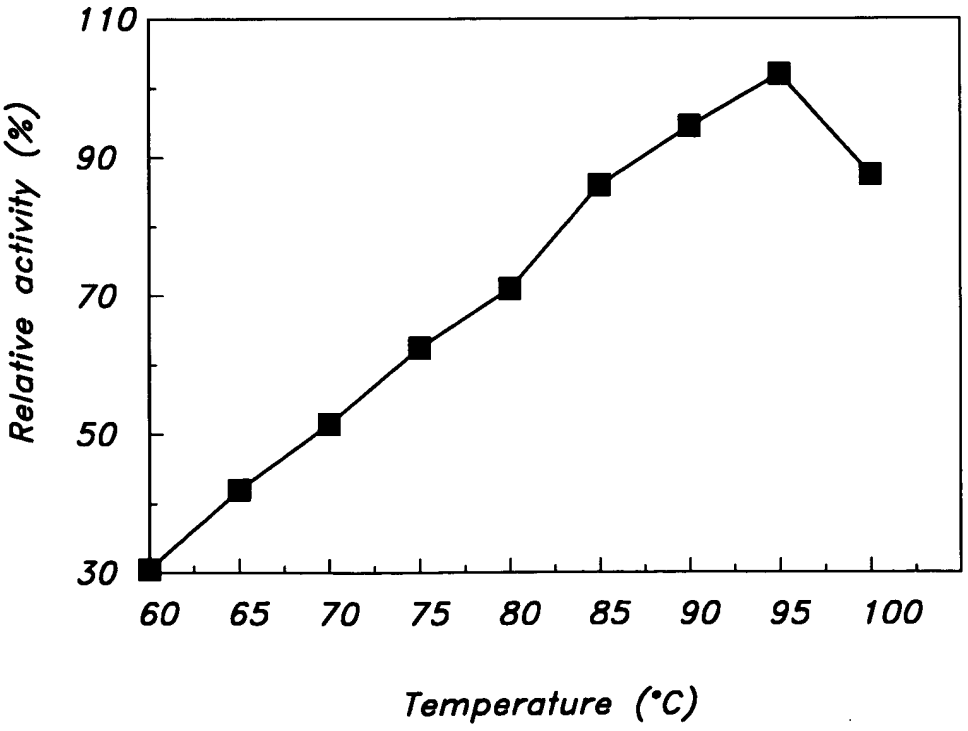
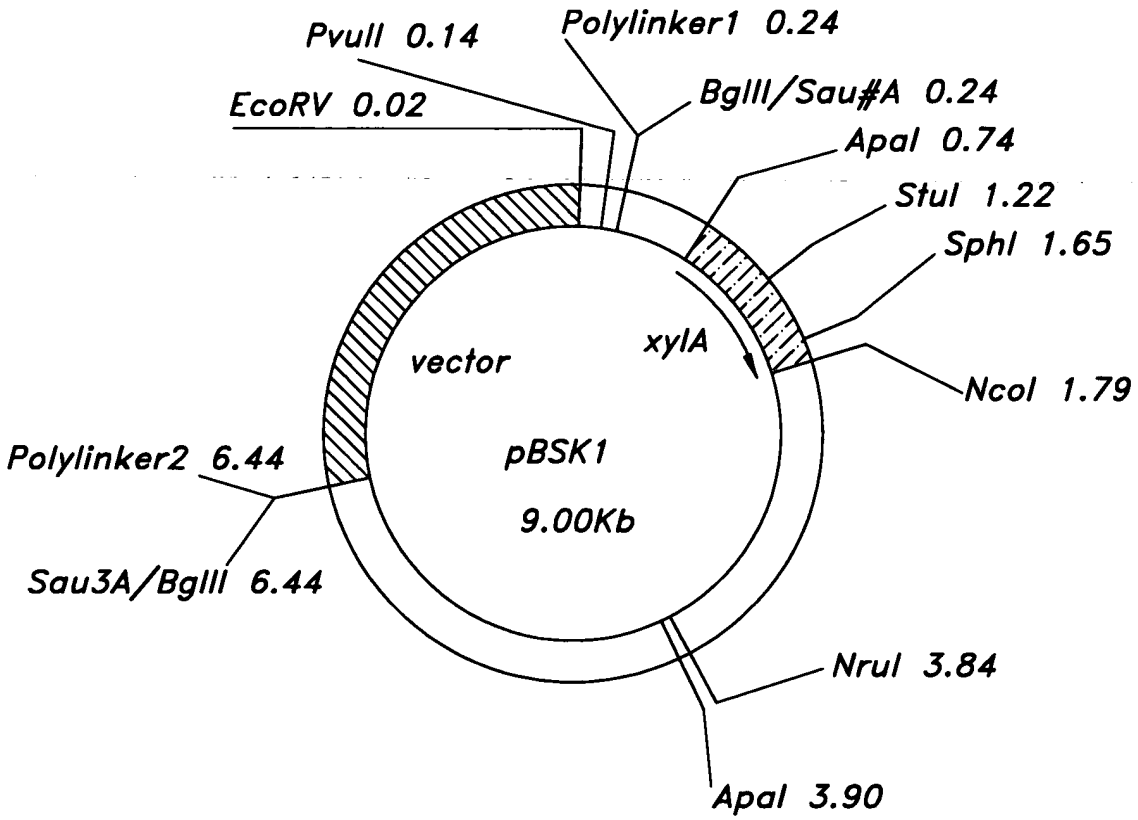

Relative activity (%)
110
90
70
50
30
60
65
70
75
80
85
90
95
100
Temperature (°C)

FIG 2


PvuII 0.14
Polylinker1 0.24
EcoRV 0.02
BglII/Sau#A 0.24
ApaI 0.74
StuI 1.22
SphI 1.65
vector
xylA
NcoI 1.79
pBSK1
9.00Kb
Polylinker2 6.44
Sau3A/BglII 6.44
NruI 3.84
ApaI 3.90

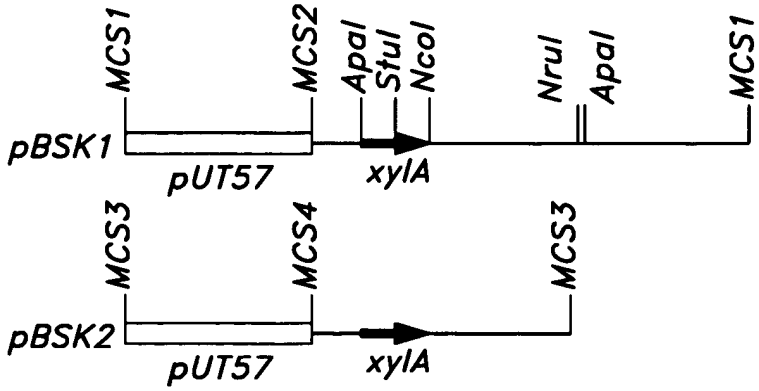

MCS1
MCS2
ApaI
StuI
NcoI
NruI
ApaI
MCS1
pBSK1
pUT57
xylA
MCS3
MCS4
MCS3
pBSK2
pUT57
xylA

FIG 3

```
CACGAGCGCCTTGGTGGACTGGGTGGACGAGTCCACACCGACGACGAGGCGGACCCTCGGCTGCTGACATCGGCTCTCCCTCTTTTTCCCGGCTCAGGGG    100

CTCTGACCTGCGGCTTCACGCTATGCCGGGCCTGTGGGCCCCGGGGTGCGGACCCGGCCCGGCCCGTTTCTGCTTCCGCGTTCCCTTCCCAGGGACGGGG    200

TCGGCATACTAATTTGTAAATCGCCCTGACGAAATAGTCGCAAGCGAGCAAGGAGCCGCGGCATGAACTACCAGCCCACCCCCGAGGACAGGTTCACCTT    300
                                                  M  N  Y  Q  P  T  P  E  D  R  F  T  F                    13

CGGCCTGTGGACCGTCGGCTGGCAGGGGCGGGACCCCTTCGGCGACGCCACGCGTCCCGCCCTCGACCCGGTGGACGTGCAGCGGCTGGCCGAACTGGGC    400
  G  L  W  T  V  G  W  Q  G  R  D  P  F  G  D  A  T  R  P  A  L  D  P  V  D  V  Q  R  L  A  E  L  G      46

GCCTACGGAGTGACCTTCCACGACGACGACCTGATCCCCTTCGGGGCGTCCGACACCGAGCGCGAGGCGCACGTCAAGCGGTTCCGTCAGGCGCTCGACG    500
  A  Y  G  V  T  F  H  D  D  D  L  I  P  F  G  A  S  D  T  E  R  E  A  H  V  K  R  F  R  Q  A  L  D      79

CGACCGGCATGACCGTTCCGATGGCCACCACCAACCTCTTCACCCACCCCGTCTTCAAGGCAGGCGCGTTCACCGCCAACGACCGCGCAGTGCGCCGTTA    600
A  T  G  M  T  V  P  M  A  T  T  N  L  F  T  H  P  V  F  K  A  G  A  F  T  A  N  D  R  A  V  R  R  Y    113

CGCCCTGCGCAAGACCATCCGGAACATCGATCTCGCGGTCGAGCTGGGCGCCAAGGTCTACGTCGCCTGGGGCGGCCGCGAGGCCGCGGAGTCCGGTGCC    700
  A  L  R  K  T  I  R  N  I  D  L  A  V  E  L  G  A  K  V  Y  V  A  W  G  G  R  E  G  A  E  S  G  A      146

GCCAAGGACGTGCGTGCGGCCCTGGACCGCATGAAGGAGGCCTTCGACCTGCTCGGCGAGTACGTCACCTCGCAGGGCTACGACATCCGGTTCGCCATCG    800
  A  K  D  V  R  A  A  L  D  R  M  K  E  A  F  D  L  L  G  E  Y  V  T  S  Q  G  Y  D  I  R  F  A  I      179
```

FIG 4A

```
AGCCCAAGCCGAACGAGCCGCGCGGCGACATCCTGCTGCCCACCATCGGCCACGCGCTCGCCTTCATCGAGCGCCTGGAGCGCCCCGAGCTGTCCGGTGT    900
E  P  K  P  N  E  P  R  G  D  I  L  L  P  T  I  G  H  A  L  A  F  I  E  R  L  E  R  P  E  L  Y  G  V    213

CAACCCCGAGGTGGGCCACGAGCAGATGGCCGGCCTGAACTTCCCGCACGGCATCGCGCAGGCTCTGTGGGCGGGCAAGCTCTTCCACATCGACCTCAAC    1000
  N  P  E  V  G  H  E  Q  M  A  G  L  N  F  P  H  G  I  A  Q  A  L  W  A  G  K  L  F  H  I  D  L  N    246

GGCCAGTCCGGCATCAAGTACGACCAGGACCTGCGCTTCGGCGCCGGTGACCTGCGCGCCGCCTTCTGGCTGGTCGACCTGCTGGAGAGCGCCGGCTGGG    1100
 G  Q  S  G  I  K  Y  D  Q  D  L  R  F  G  A  G  D  L  R  A  A  F  W  L  V  D  L  L  E  S  A  G  W    289

AGGGTCCGCGCCACTTCGACTTCAAGCCCCCGCGGACCGAGGACATCGACGGCGTGTGGGCCTCCGCGGCCGGGTGCATGCGCAACTACCTGATCCTGAA    1200
E  G  P  R  M  F  D  F  K  P  P  R  T  E  D  I  D  G  V  W  A  S  A  A  G  C  M  R  N  Y  L  I  L  K    313

GGAGCGCGCCGCCGCCTTCCGTGCCGACCCGGAGGTCCAGGCGGCCCTGCGTGCCGCCCGGCTCGACCAGCTCGCCGAGCCCACCGCGGCCGACGGCCTG    1300
  E  R  A  A  A  F  R  A  D  P  E  V  Q  E  A  L  R  A  A  R  L  D  Q  L  A  E  P  T  A  A  D  G  L    346

CAGGCCCTGCTGGCCGACCGCACCGCGTACGAGGACTTCGACGTGGACGCGGCCGCGCGCGGCATGGCCTTCGAGCGCCTCGACCAGCTCGCCATGGACC    1400
 Q  A  L  L  A  D  R  T  A  Y  E  D  F  D  V  D  A  A  A  R  G  M  A  F  E  R  L  D  Q  L  A  M  D    379

ACCTGCTGGGCGCCCGCGGCTGAACCGGGCGACGAGGGGGTACGCGCGGTCGATCTCCCTGCGTCGTCATGAGGGGGTGCTGGGCGGCTCGAGGCGGCCC    1500
H  L  L  G  A  R  G  ***                                                                                  386

GGCCCCATCGTGCTGCGTCTCCCGGGGCGCGGTGTGGGGCGTGTGC                                                            1546
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**FIG 4B**

| | |
|---|---|
| XYLA-STRSK | 99-$A_{100}$-G-$A_{102}$-FTANDR-$A_{109}$-VRR-113 |
| XYLA-STROL | 99-$D_{100}$-G-$G_{102}$-FTANDR-$D_{109}$-VRR-113 |
| XYLA-STRVO | 99-$D_{100}$-G-$G_{102}$-FTANDR-$D_{109}$-VRR-113 |
| XYLA-ACTMI | 99-$D_{100}$-G-$G_{102}$-FTSNDR-$S_{109}$-VRR-113 |
| XYLA-AMPSP | 99-$D_{100}$-G-$G_{102}$-FTSNDR-$S_{109}$-VRR-113 |
| XYLA-THETH | 99-$D_{100}$-G-$A_{102}$-FTSNDR-$W_{109}$-VRR-113 |

**FIG 5**